

DETERMINATION OF TOTAL POLYCYCLIC AROMATIC  
HYDROCARBONS (PAHs) IN SOIL OFF SELECTED MAIN  
ROADS IN KUALA TERENGGANU TOWN CENTER 1

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in soil off selected main roads in Kuala Terengganu town center  
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TESIS

**DETERMINATION OF TOTAL POLYCYCLIC AROMATIC  
HYDROCARBONS (PAHs) IN SOILS OFF SELECTED MAIN  
ROADS IN KUALA TERENGGANU TOWN CENTER I**

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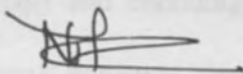
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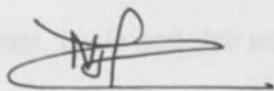
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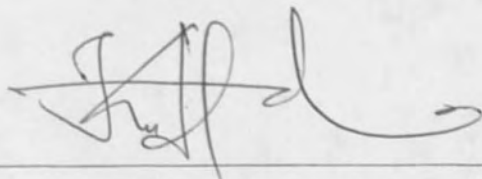
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## ABSTRACT

In this study, 10 soil samples collected from sites off selected main roads near Kuala Terengganu town center were analysed to determine the total polycyclic aromatic hydrocarbons (PAHs) concentration in the soils. In addition, an attempt has been made to estimate the degree of pollution and to ascertain the sources of these PAHs. Soil samples were Soxhlet extracted and the extracts were then separated using column chromatography to obtain the PAHs fractions. The total PAHs concentrations were quantified with reference to Tapis crude oil and Chrysene standards using ultraviolet fluorescence spectrophotometer (UVF). Total concentration of PAHs obtained in the present study was found to range from 17.0 to 205 $\mu\text{g/g}$  (dry weight chrysene equivalents) and from 420 to 5070 $\mu\text{g/g}$  (dry weight Tapis crude oil equivalents). The degree of pollution by PAHs in most sites was high in comparison to the control site. Exhaust gases emitted from automobiles was identified as the probable major contributor of PAHs in the soil samples analysed. In addition, there are many other minor sources that could also play a part in contributing PAHs into the environment such as open burning of rubbish/garden wastes, rubber tire wear and atmospheric depositions (transported from other locations or sources).

## ABSTRAK

Dalam kajian ini, 10 sampel tanah telah diambil dari tepi jalan utama terpilih berdekatan dengan pusat bandar Kuala Terengganu untuk menentukan jumlah kepekatan, tahap pencemaran dan sumber-sumber pencemar polisiklik aromatik hidrokarbon (PAHs). Sampel-sampel diekstrak dengan kaedah Soxhlet dan ekstrak yang diperolehi diasingkan dengan menggunakan kromatografi turus untuk mendapatkan pecahan-pecahan PAHs. Kepekatan PAHs dalam pecahan ditentukan dengan spektrofotometer ultraungu berpendafluor (UVF) dengan merujuk kepada piawai minyak mentah Tapis dan krisina untuk mendapatkan kepekatan jumlah PAHs dalam setiap sampel. Julat jumlah kepekatan PAHs yang diperolehi adalah dari 17.0 hingga 205 $\mu\text{g/g}$  (berat kering setara krisena) dan dari 420 hingga 5070 $\mu\text{g/g}$  (berat kering setara minyak mentah Tapis). Tahap pencemaran kebanyakan sampel dengan merujuk kepada sampel kawalan didapati adalah tinggi. Gas-gas eksos yang dikeluarkan dari kenderaan adalah dipercayai menjadi penyumbang utama PAHs dalam sampel tanah yang telah dikaji. Selain itu, dipercayai terdapat banyak lagi faktor minor yang mungkin memainkan peranan dalam menyumbang PAHs ke dalam alam sekitar seperti pembakaran terbuka sampah-sarap/buangan taman, kehausan tayar getah, dan pemendakan dari atmosfera yang disebarkan dari lokasi atau sumber-sumber lain yang tidak dapat dikenal pasti.